when the mass per unit area of the membrane increases or decreases, such as when a substance is deposited or removed from the membrane, a frequency shift in the wave received by the transducer 18 results.

In the claims:

Please amend claims 1, 11 and 23 as follows:

1. (Once amended) An apparatus for measuring the mass of a substance comprising:

a sensor having a membrane layer, the membrane for receiving the substance thereon;

an oscillator device configured to output a signal which drives said membrane at a reference resonant frequency;

a frequency detection device configured to determine a change in the reference resonant frequency caused by the presence of the substance on the membrane; and

a mass determining device configured to determine the mass of the substance based on a change in the reference resonant frequency, said change in the reference resonant frequency being indicative of the mass of the substance.

11. (Once amended) The apparatus of claim 1 further including a display device connected to a microprocessor for displaying the mass of said substance.

23. (Once amended) The apparatus of claim 1 in which the mass determining device measures the change in mass of a substance within the subnanogram range.

Marked up versions of the amendments to the specification and claims 1, 11, and 23 are enclosed herewith.

Please add claims 24 and 25 as follows:

24. An apparatus for measuring the mass of a substance comprising:

a sensor having a membrane layer, the membrane for receiving the substance thereon;

an oscillator device connected to a first transducer disposed on said membrane, the oscillator device for driving said membrane at a reference resonant frequency;

a frequency detection device connected to a second transducer disposed on said membrane, the frequency detection device for determining a change in the reference resonant frequency caused by the presence of the substance on the membrane; and

a mass determining device connected to the frequency detection device for determining the mass of the substance, the amount of change in the reference resonant frequency being indicative of the mass of the substance.

25. An apparatus for measuring the mass of a substance comprising:

a sensor having a membrane layer, the membrane for receiving the substance thereon;

an oscillator device connected to a first transducer disposed on said membrane, the oscillator device configured to output a signal which drives said membrane at a reference resonant frequency;

a frequency detection device connected to a second transducer disposed on said membrane, the frequency detection device configured to determine a change in the reference resonant frequency caused by the presence of the substance on the membrane; and

a mass determining device connected to the frequency detection device and